

ACTIVITIES OF THE CLUB

MAY TO NOVEMBER 1943

MAY 19. MEETING IN SCHERMERHORN EXTENSION, COLUMBIA UNIVERSITY.

The meeting was called to order by the first Vice-President, Dr. Seaver, at 3:30 p.m. Attendance: 24. The minutes of the preceding meeting were approved. The scientific program was presented by Mr. Louis P. Flory of the Boyce Thompson Institute, who spoke on "Color Photography," discussing the problems of equipment, exposure, and lighting in color photography. He illustrated his talk with sample slides. The meeting adjourned at 4:45 p.m.

HONOR M. HOLLINGHURST,
RECORDING SECRETARY.

- JUNE 5. FIELD TRIP to the Brooklyn Botanic Garden for a study of exotic trees and a tour of the herb garden. Leader: Miss G. Elizabeth Ashwell. Attendance: 2.
- JUNE 6. FIELD TRIP along Appalachian Trail near Southfields, N. Y. The "finds" were *Betula papyrifera* and *Orobanche uniflora*. Leader: Mr. G. G. Nearing. Attendance: 2.
- JUNE 12. FIELD TRIP to Egbertville, Staten Island. Leader: Mr. Charles Ericson. Attendance: 3.
- JUNE 20. FIELD TRIP to Montclair Heights, N. J. Joint outing with the Newark Museum Nature Club. Leader: Prof. Oliver P. Medsger. Attendance: 39.
- JUNE 26. FIELD TRIP to the New York Botanical Garden to see the laboratory and field work of the leader, Dr. A. B. Stout, Director of Laboratories. Attendance: 3.
- JULY 4. FIELD TRIP to Arden, N. Y. for fungi. Most prized catch was *Hygrophorus psittacinus*, one of the few fungi with a green color. Leader: Mr. F. R. Lewis. Attendance: 7.
- JULY 11. FIELD TRIP along Stony Brook Trail, Sloatsburg, N. Y. for lichens and fungi, both of which were fairly abundant. Leader: Mr. G. G. Nearing. Attendance: 10.
- JULY 17. FIELD TRIP to the home of Mr. W. H. Dole, our leader, to see many species of native and introduced ferns as garden plants. Attendance: 33.
- JULY 25. FIELD TRIP along the Kakiat Trail at Tuxedo, N. Y., for lichens, fungi, and general botany. Leader: Mr. G. G. Nearing. Attendance: 18.
- AUGUST 1. FIELD TRIP to Sloatsburg, N. Y. A successful search for Boleti. Leader: Mr. F. R. Lewis. Attendance: 9.
- AUGUST 8. FIELD TRIP to climb Schunemunk Mt., Washingtonville, N. Y. Leader: Dr. Alexander V. Tolstouhiov. Attendance: 5.
- AUGUST 14. FIELD TRIP to the vicinity of Midvale, N. J., for fungi. Leader: Mr. F. R. Lewis. Attendance: 2.
- AUGUST 15. FIELD TRIP to Glen Cove, L. I., for fossils and general botany. Leader: Mr. James Murphy. Attendance: 9.
- AUGUST 22. FIELD TRIP to Mt. Vernon and the Bronx, for general flora, asters and golden-rods in particular. Due to confusion about the assembly point, two trips were held. Mrs. Mary Holtzoff, the scheduled leader, had 6 present, and Mr. Joseph Monachino led a group of 11. Each group reported a satisfactory outing.
- AUGUST 29. FIELD TRIP to Harmon, N. Y., for fungi. The dry season reduced the number found materially. Leaders: Mr. F. R. Lewis and Mr. A. D. Mebane. Attendance: 3.
- SEPTEMBER 11. FIELD TRIP to Butler, N. J., for fungi, but the weather had continued dry and fungi were less than scarce. However, *Russula elegans* was found. Leader: Mr. F. R. Lewis. Attendance: 3.

- SEPTEMBER 12. FIELD TRIP to Preakness Hills, N. J., for lichens, fungi, and general botany. *Stereocaulon pileatum* was found. This is believed to be the first record for New Jersey of this species which is usually collected in the Adirondack or White Mountains. Leader: Mr. G. G. Nearing. Attendance: 17.
- SEPTEMBER 18. FIELD TRIP to Richmond Valley, Staten Island, N. Y. Several hybrid oaks were seen and the general botany observed. Leader: Mr. W. T. Davis. Attendance: 25.
- SEPTEMBER 25. FIELD TRIP to the Boyce Thompson Arboretum led by Mr. J. H. Beale, Superintendent. Attendance: 10.
- SEPTEMBER 26. FIELD TRIP to Mineola, L. I., N. Y., for Myxomycetes. Still too dry. Leader: Mr. Robert Hagelstein, Honorary Curator of Myxomycetes at The New York Botanical Garden. Attendance: 6.
- SEPTEMBER 26. FIELD TRIP to Van Cortlandt Park, Bronx, N. Y. *Fraxinus nigra* and *F. pennsylvanica* were found. They are not often seen in this vicinity. Leader: Dr. A. H. Graves of Brooklyn Botanic Garden. Attendance: 18.
- OCTOBER 2. FIELD TRIP to Grassy Sprain region, Yonkers, N. Y., for fungi. The leader, Dr. M. Levine, reported a "perfect trip." Attendance: 3.
- OCTOBER 3. FIELD TRIP to Point Pleasant vicinity, N. J. Species attracting most attention were *Gentiana saponaria*, *Polygala Nuttallii* and *P. cruciata*, *Jasione montana*, *Bartonia virginica*, and a species of *Sabatia*. Leader: Mr. V. L. Frazee. Attendance: 3.

OCTOBER 5. MEETING AT THE BROOKLYN BOTANIC GARDEN.

The meeting was called to order by the President, Dr. Robbins, at 8:15 p.m. Attendance: 34. The minutes of the meeting of May 19th were approved. Twenty-two persons were elected to annual membership and seven to associate membership. It was voted to invest another \$10,000 of the capital of the Club in war bonds. The collecting experiences of the Club members provided the scientific program of the evening. These experiences ranged from collecting on field trips or by proxy to working in victory gardens; from identifying an uncommon plant to research in the field of rubber. By the conclusion, a picture of the varied fields of interest of the Torrey Club members had been presented. The meeting adjourned at 9:40 p.m. and refreshments were served by members of the Garden staff.

HONOR M. HOLLINGHURST,
RECORDING SECRETARY.

- OCTOBER 10. FIELD TRIP to Richmond, S. I., N. Y., for general flora of brookside, old fields, and salt marsh. Leader: Miss Hester M. Rusk of the Brooklyn Botanic Garden. Attendance: 15.
- OCTOBER 17. FIELD TRIP to the Brooklyn Botanic Garden for the study of coniferous plants. Leaders: Drs. A. H. Graves and Alfred Gundersen of the Garden staff. Attendance: 11.

OCTOBER 20, 1943. MEETING AT THE NEW YORK BOTANICAL GARDEN.

The meeting was called to order by the President, Dr. Robbins, at 3:30 p.m. Attendance: 37. The minutes of the preceding meeting were approved. A Memorial Tribute to the late Dr. C. Stuart Gager was read by Dr. Dodge, chairman of the Memorial Committee:

October 20, 1943.

It is with profound sorrow and a realization of a great loss to our organization that the Torrey Botanical Club records here the death of Doctor Charles Stuart Gager, who died August 9, 1943.

Doctor Gager was elected to membership in the Club October 25, 1905. He had served the Club with high honor and distinction, not only on committees which had to do with formulating plans and policies, but also as Recording Secretary for three

years and delegate of the Club for several years on the Council of the New York Academy of Sciences and to the Council of the American Association for the Advancement of Science. He was Vice-President for fourteen years, from 1917 to 1941, and served the Club well as its President during the year just previous to his death.

In recent years it had been the custom of the Club to hold its first fall meeting at the Brooklyn Botanic Garden, at which time members were given an opportunity to report on their work during the summer period. Those who attended these meetings will long remember the cordiality and sincerity of his greeting which always left one with the impression that in him one had a very warm personal friend.

As a token of appreciation of the importance of his contributions to our knowledge of plants and recognition of his administrative abilities, and also for his example of right living, it is directed that this memorial be published with the minutes of this meeting and a copy sent to members of the bereaved family.

(Signed) SAM F. TRELEASE
P. W. ZIMMERMAN
ARTHUR H. GRAVES
B. O. DODGE, *Chairman*.

After Dr. Dodge so moved, the Memorial was accepted by a rising vote of the Club members.

The scientific program was presented by Dr. Michael Levine, who spoke on "The combined effects of colchicine and x-rays on onion root tips."

Fifteen series of experiments were made in which six to forty onions (*Allium cepa* var. *Yellow Globe* or var. *Brigham Yellow Globe*) were used in each. The bulbs were selected for their uniformity of weight, size and freedom from fungus diseases. The bulbs were placed in water for periods of three to twelve days to insure an adequate number of roots. The bulbs were then placed in a 0.01 per cent aqueous solution of colchicine and after 6, 18, 24, 36, 48, 72, 96, 125, or 140 hours of exposure were removed and washed in running water. After each given exposure, beginning with the 18 hour treatment the bulbs were divided into two groups of equal number. The first group was returned to fresh water, the second group was exposed to x-rays. A third group, not treated with colchicine, was irradiated simultaneously with the second group; both groups were then returned to water. A fourth group of bulbs was kept in water. The x-ray treatment consisted of a single exposure for 11 to 30 minutes during which time 900, 1500 or 3000 roentgen units (r) were delivered.

The roots of the four groups of bulbs were examined daily and photographed at frequent intervals. Selected root-tips from all the bulbs were prepared for microscopical examination. Root-tips exposed to colchicine for 72, 96, 125, or 140 hours and irradiated with 900 r when returned to water failed to grow. Root-tips exposed to colchicine for 24 to 48 hours and irradiated with 900 r showed temporary growth inhibition and resumed growth as indicated by the prolongation of the tips below the swellings induced by the colchicine. With larger doses of x-rays, 1500 r and 3000 r, roots colchicized for 36 to 48 hours failed to resume growth for 14 to 21 days after their return to water.

The microscopical examination of these arrested tissues showed progressive coagulation and destruction of the nuclear materials of the cells in the root-tips. The root-tips colchicized only were studied concurrently but showed complete recovery when returned to water. The roots irradiated, only showed temporary arrests of growth. With the higher doses of x-rays some injury was noted but growth was halted temporarily.

Acenaphthene used in lieu of colchicine had no effect on the activity of the x-rays. Roots so treated behaved like those non-chemically treated.

The combined effect of colchicine and x-rays was also studied on the growth of leaves of the onion of the *Brigham Yellow Globe* variety. The leaves of the colchicized bulbs showed little growth after irradiation with 3000 or 1500 r. While the plants x-rayed only showed some leaf growth but less than that which occurred in normal or colchicized bulbs. The latter two groups showed little difference between them.

These observations led to the conclusion that colchicine sensitizes the formative embryonic tissue of the root to x-rays. The influence was not determined solely by the division phase of the nucleus. The resting nuclei as well as the dividing ones seemed to be affected. The effect of the colchicine and x-rays on the dividing nuclei was more obvious for the chromosomes in metaphase stage were clumped or coagulated while no visible change appeared in those of the resting phase.

It appears that colchicine combined with x-rays has a definite role in cancer therapy. Some tumors of known cytogenetic homogeneity should be the basis for further study.

The meeting adjourned at 5:00 p.m. Tea was then served by members at the Garden.
HONOR M. HOLLINGHURST,
RECORDING SECRETARY.

OCTOBER 24. FIELD TRIP to Alpine and the Palisades, N. J. General leader: Mr. G. G. Nearing. Assistants: for fungi, Mr. F. R. Lewis; for lichens, Mr. W. L. Dix; for bryophytes, Dr. Holberg; for higher plants, Mr. L. E. Hand. Attendance: 20.

OCTOBER 31. Members were invited to participate in the annual pilgrimage of many New York hiking clubs to Long Mountain in Palisades Interstate Park, in memory of the late Mr. Raymond H. Torrey, who was President of the Torrey Botanical Club when he died in 1938.

Dr. Small, the chairman of the Field Committee, reports that during 1943 a total of 43 field trips were arranged. This is about one-half of the number of trips offered in recent years. The total attendance was 485, or about one-third of that of recent years.

NOVEMBER 17. MEETING AT THE NEW YORK BOTANICAL GARDEN.

The meeting was called to order at 3:30 p.m. by the President, Dr. Robbins. Attendance: 36. The minutes of the preceding meeting were approved. It was voted that the Club act as host to any sectional meeting of the Botanical Society of America which might be held in the New York area.

Dr. Matzke read the following letter from Mrs. C. Stuart Gager:

29 Linden Boulevard
Brooklyn.

DR. EDWIN B. MATZKE
Corresponding Secretary
Torrey Botanical Club

My dear Dr. Matzke,

I am deeply grateful to the Torrey Botanical Club for the high tribute paid to my beloved husband in the Memorial recorded in the Minutes of the meeting of the Club on October 20.

This expression of their esteem and sense of loss in his passing is most sincerely appreciated.

Faithfully yours,

(Signed) BERTHA B. GAGER

NOVEMBER 14.

The first part of the scientific program was presented by Dr. Bassett Maguire, and entitled a "Report on the 1943 Field Summer in the Great Basin."

A general and brief description of the physiographic and vegetative characteristics of the Intermountain Region was given. In somewhat more detail the structural and floral characters of the Deep Creek and Raft River Ranges, Utah, and the Ruby, North Humboldt, and Santa Rosa Ranges, Nevada, were discussed. The net results of the summer's activities were listed as approximately 1000 numbers and 6000 sheets collected.

Mr. Robert Hulbary, the second speaker, discussed "Three Dimensional Cell Shapes in the Differentiating Cortex of Elodea Stems."

There were three purposes for making this study; one to determine the three dimensional shapes of the mature cortical cells in the presence of large air spaces, another to investigate the shapes of the cells in the apical meristem, and a third to study changes in shape as the cortical cells differentiate.

In the cortex of *Elodea* (*Anacharis densa* Victorin) the three-dimensional shapes of the cells in the stem cortex are influenced by the presence of large internodal lacunae. The cortical cells are elongated parallel to the long axis of the stem, and they contain chloroplasts and starch grains. One hundred cells from each of 27 consecutive internodes were studied to determine the number of faces per cell. Then 600 additional cells—100 from each fifth internode—were studied more intensively for number and kinds of faces and the combinations of faces. The average number of faces per cell for the 3300 cells was 8.79. More than one third of all the cells (1443) were 8-hedra. Quadrilateral faces occurred more frequently than all of the other kinds added together. In 600 cells studied more intensively only 31 different combinations of faces were encountered. This apparent uniformity in cell shape in *Elodea* stem cortex is further attested to by the fact that three of these 31 patterns were outstandingly characteristic for the issue.

Using the method of Duchartre, the average number of faces per cell in the apical meristem was found to be 13.88.

The large internodal air canals originate schizogenously, and they are completely delimited at the base of the apical meristematic region. The reduction in number of faces per cell from the apical meristem to the mature cortex and the other differentiations in cell shape concomitant with the development of the internodal lacunae are due to the cell enlargement and to cell divisions which are limited to two distinct planes.

Following discussion of the two talks, the meeting was adjourned at 4:55 p.m. Tea and refreshments were then served by friends at the Garden.

HONOR M. HOLLINGHURST,
RECORDING SECRETARY.

ADDITIONS TO THE LIST OF BOTANISTS IN THE FRONTISPIECE

- No. 24. For C. F. Mook read P. V. Mook
 No. 47. Mrs. George S. Powell
 No. 48. George S. Powell
 No. 49. Mrs. Robert Hagelstein

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